

TITLE OF THE INVENTION

CALL ORIGINATING METHOD OF MOBILE COMMUNICATION
TERMINAL, MOBILE COMMUNICATION TERMINAL, AND
INFORMATION SERVER APPARATUS

5 CROSS-REFERENCE TO RELATED APPLICATIONS

This application is based upon and claims the
benefit of priority from the prior Japanese Patent
Application No. 2000-163041, filed May 31, 2000,
the entire contents of which are incorporated herein
10 by reference.

BACKGROUND OF THE INVENTION

The present invention relates to a portable mobile
communication system such as cdmaOne that can be used
globally.

15 Conventional mobile phones adopt different
communication schemes in different countries. For this
reason, mobile phones that are manufactured for use in
Japan can be used only in Japan. Recently, with the
advent of a communication scheme called cdmaOne, mobile
20 phones of this communication scheme will be usable soon
all over the world. Phones of cdmaOne are now usable
in Japan and Hong Kong (April 1, 2000). In the near
future, those phones will be usable in other Asian
countries and the U.S.

25 When voice communications using a single mobile
phone are allowed not only in a given country but
also in a plurality of countries, the following

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problems are posed. A telephone number that the user frequently dials is stored in the mobile phone itself as an abbreviated dialing number. For example, if "044-549-xxxx" is stored, a call can be placed within Japan but cannot be placed from Hong Kong. Hence, a number that indicates an international call and a country code of Japan must be appended to the aforementioned telephone number, and the first "0" of a city code must be removed. For example, when the user dials the aforementioned telephone number from the U.S., he or she must dial "011 (International number identification code)-81 (country code of Japan)-44-549-xxxx". In this case, the international number identification code varies depending on countries. Upon calling from the U.S. to a country other than the U.S., "011" must be appended as described above; upon calling from Japan to abroad, "001" or other international dialing numbers must be appended. In this manner, telephone numbers registered in advance such as abbreviated dialing numbers cannot often be used depending on countries from which the user originates a call.

In such case, the user can dial a full telephone number by appending the international number identification code and country code thereto without using an abbreviated dialing number. But since the user normally uses abbreviated dialing numbers, he or she cannot often remember the full telephone number.

Also, a very long telephone number appended with the international number identification code and country code often leads to pushing a wrong number.

5 The same problem is posed when the user calls upon
emergency such as fire, accidents, or the like. When
the user calls an ambulance upon disease, accident, or
the like, he or she can dial "119" in Japan but "911"
in the U.S. In this manner, emergency call numbers
differ depending on countries. However, at the
10 critical moment, the user who is in the U.S, often
dials "119" for Japanese since he or she is upset and
cannot remember the correct number. Furthermore, even
when the user dials "911", since a foreign operator
answers, it is difficult for a user who is not a fluent
15 speaker of English to explain the emergency contents.

Travelers often have booklets that give the
telephone numbers of a local tourist office, a hospital
where they speak in their mother language, and the
like. However, the user normally leaves such booklet
20 in the hotel or cannot find it from baggage at the
critical moment.

Since network providers such as AOL (America
OnLine) and the like have connection points
worldwide, the user can access the Internet anywhere
25 on the globe, and can exchange e-mail messages, and
the like. However, a user terminal is normally set
with a connection point closest to a place where he or

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she most frequently uses the terminal. Once he or she goes abroad, the connection point set in the user terminal must be changed. At this time, the user cannot easily find out a connection point closest to
5 the current location or a cheapest connection point.

In this manner, the user cannot place an international call using a telephone number registered as an abbreviated dialing number in the conventional mobile communication terminal such as a mobile phone
10 and the like, since international number identification code, country code, and the like are different in different countries.

When the user wants to receive a telephone service in his or her mother language upon emergency, he or
15 she cannot easily call a local service provider which provides such service.

Furthermore, the user cannot easily access a connection point closest to his or her current location or a cheapest connection point to a network such as the
20 Internet or the like anywhere he or she wants.

That is, since the conventional mobile communication terminal such as a mobile phone or the like requires different connection information used to connect to a service provider that provides services
25 that the user wants or another terminal depending on the user location, connection information corresponding to the current user location must be retrieved and

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input, resulting in a heavy load on the user.

BRIEF SUMMARY OF THE INVENTION

It is an object of the present invention to provide a call originating method which can originate
5 a call using connection information which is used to connect to a service provider that provides services of user's choice or another terminal and which differs depending on the user location without imposing any load on the user, and a mobile communication terminal
10 using the method.

According to an aspect of the invention, there is provided a call originating method applied to a mobile communication terminal for connecting the mobile communication terminal to a service provider over
15 network using a connection information item corresponding to a service provider and a user's present location, the method comprising: storing a plurality of connection information items corresponding to respective regional service providers, in a memory
20 device, specifying the user's present location; retrieving, from the memory device, the connection information items corresponding to the specified user's present location and a service that is required by the user: requiring the network to connect the mobile
25 communication terminal to the regional service provider, using a retrieved connection information item.

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According to an aspect of the invention, there is provided a call originating method applied to a mobile communication terminal for connecting the mobile communication terminal to another terminal over network using a connection information item corresponding to a destination, the method comprising: storing a plurality of connection information items corresponding to a plurality of destinations, respectively, in a memory device, specifying a user's present location; designating a destination; retrieving a connection information item corresponding to a designated destination from the memory device; converting the retrieved connection information item to another connection information item which permits the mobile communication terminal at a specified user's location to be connected to another terminal corresponding to the designated destination; requiring the network to connect the mobile communication terminal to another terminal corresponding to the designated destination, using a converted connection information item.

According to an aspect of the invention, there is a mobile communication terminal comprising: a memory device which stores a plurality of connection information items corresponding to a plurality of regional service providers, respectively; a location information acquiring device which acquires a information item which permits a user's present location to be

specified; a retrieval device which retrieves from the memory device, a connection information item corresponding to a specified user's present location and a service that is required by the user; and a connection device which connects the mobile communication terminal to the regional service provider, using a retrieved connection information item.

According to the aspect of the present invention, there is a mobile communication terminal comprising:

a memory device which stores a plurality of connection information items corresponding to a plurality of destinations, respectively; a location information acquiring device which acquires a information item which permits a user's present location to be specified; a designation device which designates a destination; a retrieval device which retrieves a connection information item corresponding to a designated destination, from the memory device; a connection information converter which converts the retrieved connection information item to another connection information item which permits the mobile communication terminal at the specified user's location to connect to another terminal corresponding to the designated destination; a connection device which connects the mobile communication terminal to the another terminal corresponding to the designated destination, using the converted connection information

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item.

According to the aspect of the present invention,
there is a mobile communication terminal comprising,
a first memory device which stores dictionary data for
5 translating user's native language into other languages
and vice versa; a second memory device which stores
a plurality of first location information items corre-
sponding to one of the other languages, respectively;
a location information acquiring device which acquires
10 a second location information item which permits a
user's present location to be specified; a language
selector which selects a language, from the other
languages, based on a specified user's present location
and the first location information items stored in
15 the second memory device; a retrieval device which
retrieves the dictionary data for translating the
user's native language into the selected language and
vice versa, from the first memory device; a translation
device which translates the user's native language into
20 the selected language and vice versa using retrieved
dictionary data.

According to the aspect of the present invention,
there is a information server apparatus communicating
with a mobile communication terminal corresponding to a
25 user's location, comprising; a memory device configured
to store a plurality of latest connection information
items corresponding to a plurality of regional service

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providers, respectively; a request reception device configured to receive a request for requesting a latest connection information items corresponding to the user's location, from the mobile communication terminal; a retrieval device configured to retrieve the requested connection information item, from the memory device; and a transmitter configured to transmit a retrieved connection information item to the mobile communication terminal.

10 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

FIG. 1 is a block diagram showing an example of the arrangement of a mobile communication terminal according to the first embodiment of the present invention;

15 FIG. 2 is a flow chart for explaining a select process sequence of connection information depending on location information;

FIGS. 3A and 3B are tables of connection points, which are stored in a connection information storage;

20 FIG. 4 is a table of connection points in case of emergency, which is stored in the connection information storage;

FIG. 5 is a block diagram showing the arrangement of a mobile communication terminal according to the second embodiment of the present invention;

FIG. 6 is a table of abbreviated dialing numbers, which is stored in a connection information storage;

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FIG. 7 is a table used when a connection information converter converts a given telephone number into that suitable for an international call;

FIG. 8 is a flow chart for an international call origination process;

FIG. 9 is a block diagram showing the arrangement of a mobile communication terminal according to a modification of the first embodiment, which terminal acquires a table of latest connection information stored in the connection information storage via communications with a service server;

FIG. 10 is a block diagram showing an example of the arrangement of a mobile communication terminal according to the third embodiment of the present invention;

FIG. 11 is a table used upon selecting a language by a language selector;

FIG. 12 is a flow chart showing the language select process of the mobile communication terminal of FIG. 10; and

FIG. 13 is a block diagram showing an example of the arrangement of a server which provides connection information to the mobile communication terminal shown in FIG. 9.

DETAILED DESCRIPTION OF THE INVENTION

(First Embodiment)

FIG. 1 shows an example of the arrangement of

principal part of a mobile communication terminal
(e.g., a mobile phone, PHS, or the like) according
to the first embodiment of the present invention.
The mobile communication terminal shown in FIG. 1 can
5 communicate with terminals scattered worldwide using
region-dependent telephone numbers (like those for
a telephone network) via a network connected.

A case will be exemplified below wherein the
mobile communication terminal connects a service
10 provider that provides a connection service to the
Internet.

As shown in FIG. 1, the mobile communication
terminal is constructed by connecting a connection
designation device 1, connection information storage 2,
15 selector 3, input device 4, output device 5, location
information acquiring device 7, and transceiver 8 to
a controller 9.

The connection information storage 2 stores, e.g.,
location information of connection points to a network
20 such as the Internet or the like, and information
(e.g., telephone numbers) required to connect to the
connection point as connection information.

The transceiver 8 sends/receives information by
connecting to a telephone network using a wireless
25 communication scheme such as cdmaOne or the like. The
transceiver 8 communicates with a location information
server apparatus 10 (e.g., base station in case of

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cdmaOne) that provides information for specifying the current location of the user.

5 The location information acquiring device 7 specifies the current location of the user on the basis of the radio wave strength or the like measured when the transceiver 8 communicates with the location information server apparatus 10, and holds location information of the specified current location.

10 The connection designation device 1 is used by the user to input a telephone number, a connection designation or the like to the Internet, and the like.

15 The selector 3 selects connection information best suited to the current location of the user from those stored in the connection information storage 2 on the basis of the location information acquired by the location information acquiring device 7.

20 The input device 4 comprises, e.g., a keyboard, microphone, and the like. The input device 4 is used to input text to be sent as an e-mail message, and to input a voice for conversation.

25 The output device 5 outputs information such as voice, data, and the like including menu items for selection/designation, a line connection state, a received voice, e-mail messages received or to be sent, and the like. The output device 5 comprises a display, loudspeaker, and the like.

The controller 9 controls the aforementioned

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devices, and executes create and send/receive processes of e-mail messages, and the like. Upon receiving a user's connection request from the connection designation device 1, the controller 9 executes

5 a control process for sending a connection request (originating a call) to a network (e.g., a telephone network) preferentially using the connection information selected by the selector 3 (using the selected connection information unless a special

10 instruction or the like is input by the user upon using the selected connection information).

When the user inputs a connection instruction for the purpose of connecting the user's mobile communication terminal with this arrangement to a

15 desired communication partner, from the connection designation device 1, the mobile communication terminal with this arrangement issues a request for requesting the mobile communication terminal to connect to the telephone terminal under the control of the controller

20 9. Upon completion of line connection with the desired communication partner, information such as a voice, text, or the like input from the input device 4 is sent from the transceiver 8. On the other hand, when the transceiver receives information such as a voice, text,

25 or the like, that information is output to the output device 5.

A case will be exemplified below wherein the

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communication scheme is cdmaOne. In this case, the location of the mobile communication terminal is specified via communications with a base station serving as the location information server apparatus

5 10. However, the present invention is not limited to such specific scheme. For example, the location of the mobile communication terminal may be specified via communications with a satellite using a GPS system. In this case, the location information server apparatus

10 10 corresponds to a GPS satellite and ground base station, and the transceiver 8 and location information acquiring device 7 correspond to a GPS receiver.

FIG. 2 shows the flow of a connection point select process in this embodiment. The location information

15 used to specify the current location of the mobile communication terminal is acquired in two cases, i.e., it is acquired periodically and when the user issues a connection instruction to the Internet to execute a mail process. FIG. 2 shows the processing flow after

20 location information is acquired in these cases.

The controller 9 holds a telephone number of the connection point that is used currently (to be referred to as a current connection point hereinafter), and issues a connection request to that connection point

25 using the held telephone number. This telephone number is rewritten as follows.

The location information acquiring device 7

acquires the current location (X_t , Y_t) via communications with the location information server apparatus 10 (step S101).

5 The specifying method of the location information in the location information acquiring device 7 is basically the same as that of the seismic center. More specifically, circles obtained by converting the strengths of radio waves received from a plurality of (three in most cases) base stations into distances are
10 drawn, and the overlapping portion of the three circles is calculated as the current location.

The distance between the current location (X_t , Y_t) and old location (X_{t-1} , Y_{t-1}) is calculated. It is checked if the calculated distance is larger than
15 a predetermined value (α in this case) (step S102).

If the distance between the current and old locations is not larger than α , since the location of the mobile communication terminal has not moved much from the old one, the connection point need not be
20 changed in such case. That is, the processing ends.

If the distance is larger than α , since the current connection point must be changed, the flow advances to step S103.

25 The connection information storage 2 stores a connection point table, as shown in FIG. 3A. This connection point table registers location information of a plurality of connection points of respective

regions set by a provider who provides Internet connection services, and the telephone numbers of these connection points.

5 In step S103, the selector 3 compares the location information of the current location acquired by the location information acquiring device 7, and location information of each of connection points stored in the connection information storage 2, and selects a connection point closest to the current location (X_t, Y_t).

10 For example, the selector 3 calculates the distance between the current location (X_t, Y_t) and location information (X_n, Y_n) ($n = 1, 2, 3, \dots$) of each of the connection points stored in the connection information storage 2, and selects a connection point with the smallest distance. That is, the selector 3 selects a connection point that satisfies $\text{Min}(\text{distance}((X_t, Y_t) - (X_n, Y_n)))$ ($n = 1, 2, 3, \dots$).

15 Note that the connection information storage 2 may store a connection point table shown in FIG. 3B. The connection point table shown in FIG. 3B registers location information of each of a plurality of connection points, their telephone numbers, and other parameters (e.g., connection fees or the like). The selector 3 may select a connection point with a minimum combination of the distance difference and parameter dsn ($n = 1, 2, 3, \dots$). More specifically, the selector 3 selects a connection point which

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satisfies $\text{Min}(W1 \cdot \text{distance}((X_t, Y_t) - (X_n, Y_n)) + W2 \cdot \text{dsn})$
($n = 1, 2, 3, \dots$) using predetermined weighting
coefficients $W1$ and $W2$.

5 The selector 3 then rewrites the current
connection point by the telephone number of the
selected connection point (step S104).

10 For example, assume that the telephone number of
the connection point of Tokyo, Kawasaki, Yokohama, or
the like in Japan is held as the current connection
point of the mobile communication terminal, and the
user has traveled to New York together with the mobile
communication terminal. At this time, the process
shown in FIG. 2 is executed to rewrite the current
connection point by the telephone number of a
15 connection point of New York closest to the location
of the user (mobile communication terminal).

20 After the telephone number of the current
connection point is rewritten in this way, when the
user inputs a connection instruction to the Internet
from the connection designation device 1, the
controller 9 connects to the Internet using the
rewritten telephone number of the connection point.

25 If the user is currently in New York, the mobile
communication terminal connects to the Internet using
the telephone number of the connection point of New
York on the basis of the location information of the
user acquired by the location information acquiring

device 7. Therefore, the user can connect the mobile communication terminal to the Internet from a connection point which is closest to the current location of the user and can be used at the lowest fee.

5 When the user goes back to Japan again together with the mobile communication terminal, the process in FIG. 2 is executed, and the current connection point is rewritten by the telephone number of a connection point in Japan, which is closest to the location of the user
10 (mobile communication terminal).

 In this way, the user himself or herself need not set a connection point in the mobile communication terminal in accordance with his or her current location.

15 If it is determined in step S102 in FIG. 2 that the distance between the previously acquired location information and currently acquired location information is larger than α , and the current connection point must be changed, the user may be informed of that state (a
20 message may be output from, e.g., the output device 5). After user's permission, the current connection point may be changed.

 In the above description, one connection point table is prepared in correspondence with an arbitrary
25 region. However, in practice, there are a plurality of connection point tables in correspondence with a given region. Note that one table registers a plurality of

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connection points present in that region.

For example, connection point tables may be prepared in units of countries, and the table itself may be rewritten in correspondence with a region to which the current location belongs.

If it is determined in step S102 that the distance between the current and old locations is larger than α , and the user has moved outside Japan, the controller 9 reads out a connection point table of another country stored independently, and rewrites the connection point table of Japan stored in the connection information storage 2 by the readout connection point table of the other country. In this case, the connection point tables for respective countries may be stored in a storage independent from the connection information storage 2, or may be stored in the connection information storage 2.

Alternatively, the connection information storage 2 may store a plurality of connection point tables corresponding to regions, and a connection point table of a region near the location indicated by the location information acquired by the location information acquiring device 7 may be selected. The selected table may be searched for a connection point closest to the location indicated by the location information.

In this manner, since the data volume to be searched can be reduced by selecting one of a plurality

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of tables in advance, the time required for searching for a connection point corresponding to location information can be searched.

For example, a plurality of connection point
5 tables for respective regions such as Kanto zone, Tohoku zone, Hokkaido zone, and the like in Japan are prepared, and are stored in the connection information storage 2. Furthermore, a plurality of connection
10 point tables corresponding to countries such as the U.S., France, and the like are prepared, and are stored in the connection information storage 2.

Furthermore, as shown in FIG. 9, the transceiver 8
may communicate with a server 100 that provides a
latest connection point table to the user to acquire
15 the latest connection point table. In this case, the server 100 may be provided to each region. The mobile communication terminal pre-stores connection information (e.g., a telephone number) used to connect the
20 server 100 provided to each region, and the location information of that server 100. The server 100 closest to the mobile communication terminal is selected based on the location information acquired in step S101 in FIG. 2, and the pre-stored location information of each server 100. The mobile communication terminal sends
25 a download (transmission) request of the latest connection point table to the selected server 100 using the connection information of the selected server 100.

The request message to be sent to the server 100 may contain the location information acquired in step S101 in FIG. 2.

5 Note that a table that registers the location information and connection information of the server 100 provided to each region is stored in the connection information storage 2 as in the table shown in FIG. 3A.

10 The mobile communication terminal sends the aforementioned request message to the server 100, when the user inputs a connection instruction to the Internet, a connection point update instruction, or the like.

15 It is another object of the present invention to provide an information server apparatus that provides, to such mobile communication terminal, latest communication information used to connect a service provider of user's choice in correspondence with the user location.

20 FIG. 13 shows an example of the arrangement of the server 100.

As shown in FIG. 13, the server 100 comprises a request reception device 101, retrieval device 102, connection information storage 103, and transmitter 104.

25 The connection information storage 103 stores one or a plurality of latest connection point tables shown in FIG. 3A or 3B. One connection point table registers

information that pertains to connection points present within a given range in the format shown in FIG. 3A or 3B.

When the request reception device 101 receives a request message from the mobile communication terminal, the retrieval device 102 retrieves a connection point table corresponding to a region near the current location of the mobile communication terminal from the connection information storage 103 on the basis of the location information contained in that request message. For example, the retrieval device 102 retrieves a connection point table of a given region that includes a location indicated by the location information contained in the request message.

The retrieval device 102 passes the retrieved connection point table to the transmitter 104.

The transmitter 104 transmits the retrieved connection point table to the mobile communication terminal as the request source.

The transceiver 8 of the mobile communication terminal acquires the latest connection point table from the server 100. The controller 9 rewrites the table stored in the connection information storage 2 by the latest connection point table.

As described above, according to this embodiment, a connection point to a network such as the Internet or the like, which is closest to the location of the

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In the embodiment described above, the service
5 provider that provides connection services to the
Internet has been exemplified. Therefore, the
connection information storage 2 stores the connection
point table to the Internet.

Note that the connection points in case of emergency are those to service providers from which the user can receive emergency services in his or her mother language upon emergency while he or she is abroad. For example, in Japan as the motherland of the user, "119" is a fire engine/ambulance call, and "110" is a police call. When the connection information table 2 stores the table of connection points in case of emergency, the user can receive a service corresponding the purpose of an emergency call in the current location (country) of the user by only dialing "119" or "110" as in emergency in Japan.

The table of connection points in case of emergency registers the location information and

telephone numbers of service providers of each region
corresponding to the telephone numbers (e.g., "119",
"110", and the like in Japan) of service providers
in the user's motherland. More specifically, the
5 telephone numbers of service providers of each region
(country), which provide the same services as those
of the service providers in the user's motherland,
and their location information are registered in
association with the telephone numbers of the service
10 providers in the user's motherland.

The mobile communication terminal acquires the
latest location information (current location) of the
user in accordance with the flow chart shown in FIG. 2
as in the embodiment described above (step S101).
15 Then, the telephone numbers of regional service
providers corresponding to the service providers in the
user's motherland are selected from the table shown in
FIG. 4 (steps S102 and S103). The controller 9 holds
the selected telephone numbers of regional service
20 providers corresponding to those of the service
providers in the user's motherland. Every time the
regional service providers are changed in the processes
in steps S102 and S103, the controller 9 updates
the telephone numbers of regional service providers
25 corresponding to those of the service providers in the
user's motherland (step S104).

If a connection instruction to a network, i.e.,

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a connection instruction to a service provider (e.g., telephone number "119" or "110") is input at the connection designation device 1 (if the user dials "119" or "110"), the transceiver 8 originates a call using the telephone number of the regional service provider corresponding to the instructed telephone number.

Note that the mobile communication terminal may communicate with the server 100 to acquire the latest table of connection points in case of emergency corresponding to the current location as in the embodiment described above.

As described above, according to the embodiment, the user can use an optimal service provider (e.g., the closest or cheapest connection point to a network such as the Internet or the like, or a service provider that provides a required service upon emergency) dependently of the current user location.

(Second Embodiment)

The second embodiment of the present invention will be explained below focusing on differences from the first embodiment. The second embodiment will explain a mobile communication terminal that automatically appends an international number identification code, country code, and the like to a telephone number pre-stored as an abbreviated dialing number.

FIG. 5 shows an example of the arrangement of

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a mobile communication terminal (e.g., a mobile phone, PHS, or the like) according to the second embodiment. Only differences from FIG. 1 will be explained below. More specifically, a connection information converter

5 13 is connected to the controller 9 in place of the selector 3 in FIG. 1, and the connection information storage 2 stores abbreviated dialing numbers and full telephone numbers of the abbreviated dialing numbers in association with the abbreviated dialing numbers.

10 The connection information converter 13 converts a telephone number stored in the connection information storage 2 into an international telephone number in accordance with the current location of the user. More specifically, the converter 13 appends an international

15 number identification code, country code, and the like to the telephone number.

The connection information storage 2 stores a table of abbreviated dialing numbers shown in, e.g., FIG. 6. This table registers full telephone numbers in

20 association with abbreviated dialing numbers. In the table of abbreviated dialing numbers shown in FIG. 6, a country code (e.g., "81" for Japan) and a rule upon converting into an international telephone number are registered in association with the abbreviated dialing

25 numbers.

The conversion rule into an international telephone number is, for example, "to remove first "0"

of city code".

Note that the country code and the rule upon converting into an international telephone number are registered in association with the abbreviated dialing numbers in FIG. 6, but the present invention is not limited to such specific table. For example, an international number identification code held by the connection information converter 13 may be registered in association with the abbreviated dialing numbers.

The connection information converter 13 stores a table which registers country names, representative locations, and international number identification codes in units of countries, as shown in FIG. 7. The table shown in FIG. 7 is used upon converting a telephone number into an international telephone number.

The location of each country expresses not only the representative location using the latitude and longitude, but also the range of region of the corresponding country using the latitude and longitude. In this embodiment, the latter case will be explained.

The international call origination process will be explained below with reference to the flow chart shown in FIG. 8.

If a call origination designation is input from the connection designation device 1 when the user dials a given abbreviated dialing number (step S200), the

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location information acquiring device 7 acquires
location information (Xt, Yt), as described above
(step S201). The connection information converter 13
compares the acquired location information with the
5 location information of each country shown in FIG. 7 to
check if the user is in his or her country (step S202).

For example, if the user ordinarily lives in
Japan, and the acquired location information indicates
a location within the region of Japan, it is determined
10 that the user is in his or her country. If it is
determined that the user is in his or her country,
the controller 9 reads out a full telephone number
corresponding to the input abbreviated dialing number
from the table (see FIG. 6) stored in the connection
15 information storage, and originates a call using the
readout telephone number (step S205). That is, if
abbreviated dialing number "1" is input, as a telephone
number corresponding to this abbreviated dialing number
is "044-549-xxxx", a call is placed using that
20 telephone number.

If it is determined in step S202 that the user is
not in his or her country, the connection information
converter 13 selects a country most suitable for
the acquired location information (e.g., a country
25 having location information closest to the acquired
location information) from the table shown in FIG. 7
(step S203).

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telephone number is converted into "011 (international number identification code)-81 (country code of Japan)-44-549-xxxx". The controller 9 originates a call using the converted telephone number (step S205).

5 Conversely, if a (full) telephone number registered as an abbreviated dialing number is an international telephone number from Japan to the U.S., it is "001-1-212-9xx-xxxx". Assume that the current location of the user specified by the acquired location information upon dialing this abbreviated dialing
10 number is the U.S. In this case, the connection information converter 13 converts a full telephone number corresponding to the abbreviated dialing number into "212-9xx-xxxx" by removing international number
15 identification code "001" and country code "1" of the U.S. from that number. In this case, the connection information storage 2 can pre-store a conversion rule for converting an international telephone number into a local telephone number for each country.

20 As described above, according to the second embodiment, the user can place an international call using a telephone number stored as an abbreviated dialing number in his or her mobile phone anywhere in the world (regardless of an international telephone
25 number). That is, the user need only select an abbreviated dialing number to place an international call, and need not re-input such a long number string

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that readily leads to errors as an international telephone number. Hence, the load on the user upon placing an international call can be reduced.

(Third Embodiment)

5 The third embodiment of the present invention will be described below focusing on differences from the first and second embodiments.

10 FIG. 10 shows an example of the arrangement of a mobile communication terminal (e.g., a mobile phone, PHS, or the like) according to the third embodiment, and only differences from FIG. 1 will be explained below. More specifically, a language selector 14 is connected to the controller 9 in place of the selector 3 in FIG. 1, and a dictionary data storage 15 is connected in place of the connection information storage 2 in FIG. 1.

20 The language selector 14 selects a language used in a country corresponding to location information acquired by the location information acquiring device 7 on the basis of that location information. For this purpose, the language selector 14 stores a table which registers representative locations and official languages in association with country names, as shown in FIG. 11. The location of each country expresses not only the representative location using the latitude and longitude, but also the range of a region of the corresponding country using the latitude and longitude.

25

In this embodiment, the latter case will be explained.

5 The dictionary data storage 15 stores dictionary data that allows mutual translation between a specific language (e.g., user's mother language) and other languages. The dictionary data storage 15 stores dictionary data which allows mutual translation between the language selected by the language selector 14 and the specific language (e.g., user's mother language), so that the user can access that data.

10 The controller 9 comprises a translation engine (translation processor) 16 which translates the contents on a web page, text, or the like, which is designated by the user, using the dictionary data (the language selected by the language selector 14 and the specific language (e.g., user's mother language))
15 stored in the dictionary data storage 15.

 The processing operation of the mobile communication terminal shown in FIG. 10 will be described below with reference to the flow chart shown in FIG. 12.

20 After the current location is specified (location information is acquired) in the same manner as in the above embodiment (step S301), the language selector 14 compares the acquired location information and location information of each country obtained from the table
25 shown in FIG. 11 to check if the user is in his or her country (step S302). For example, if the user ordinarily lives in Japan, and the acquired location

5 If it is determined in step S302 that the user is
not in his or her country, the language selector 14
selects a country most suitable for the acquired
location information (e.g., a country having location
information closest to the acquired location
10 information) from the table shown in FIG. 11 (step
S303). For example, a country that includes a location
indicated by the acquired location information within
the region of that country is selected.

20 At this time, in the dictionary data storage 15,
dictionary data (e.g.,
English-Japanese/Japanese-English dictionary data) that
allows mutual translation between the language selected
by the language selector 14 and the specific language
25 (e.g., user's mother language), so that the user can
access that data as needed.

In this arrangement, when the user inputs a local

word, the meaning of which is to be checked, from the input device 4, and designates to look up a dictionary, the dictionary data stored in the dictionary data storage 15 is searched for a word in the user's mother language corresponding to the input local word. Then, the search result is displayed on a display as the output device 5.

The controller 9 translates Japanese text input from the input device 4 into English in accordance with a user's instruction. The controller 9 displays the translation result on a display as the output device 5.

Furthermore, the controller 9 translates the contents of a web page of the Internet received via the transceiver 8 in accordance with a user's instruction into Japanese, and displays the translation result on a display as the output device 5.

As described above, in the mobile communication terminal according to the third embodiment, the language selector 14 automatically selects a dictionary of a language corresponding to the current visiting country of the user. Therefore, the user can retrieve or automatically translate words that he or she cannot understand, using an electronic dictionary of the language used in the current location of the user. Also, the user can easily translate the contents of a web page or an e-mail message to be received/sent, which is described in a local language, into the mother

As described above, the mobile communication terminal according to the first to second embodiments can be easily connected to a communication partner of user's choice in accordance with the current location of the user. Also, using the server apparatus of the first embodiment, latest connection information to a unique and optimal service provider (e.g., the closest or cheapest connection point to a network such as the Internet or the like, or a service provider that provides a required service upon emergency) for each region can be easily provided to the mobile communication terminal, corresponding to the current user location.

The present invention is not limited to the above embodiments. Various changes and modifications can be made within a technical scope of the present invention.

Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details and representative embodiments shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.